



Optimum Parameters for Tuned Inerter Damper

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Abstract

In this work, optimum parameters of the Tuned Inerter Damper (TID) are obtained using Equal Eigenvalue (EEV) criterion. Performance of this TID is compared with that of other optimum TID available in the literature. EEV criteria is loading independent whereas, other criteria available in the literature, are loading dependent. TID uses an inerter, a mechanical device with two terminals that appears to have a mass amplification effect. TID performance is first assessed for harmonic loading. Frequency Response Function (FRF) from both the TID is compared. Robustness, i.e., sensitivity to mistuning is also assessed and it is found that TID with EEV parameters is more robust. Under seismic excitation, both the TID are found to give similar reduction in response.

Keywords: Tuned inerter damper, Equal eigenvalue criterion, Frequency response function